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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/824,258 | 04/14/2004 | Lew Aronson | 15436.312 | 6508 |

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| EXAMINER | |
|---|---|
| GARCIA, LUIS | |
| **ART UNIT** | **PAPER NUMBER** |
| 2613 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 01/11/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/824,258 | ARONSON ET AL. | |
| | Examiner | Art Unit | |
| | Luis F. Garcia | 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. **Claims 1, 5, 7-10, 12-18 and 20 are rejected** under 35 U.S.C. 102(b) as being anticipated by MacKinnon et al (US 6,366,373), MacKinnon hereinafter referred to as MacKinnon.

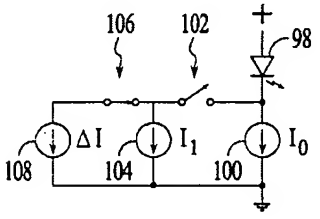
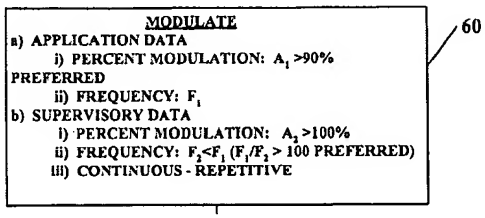



FIG. 9



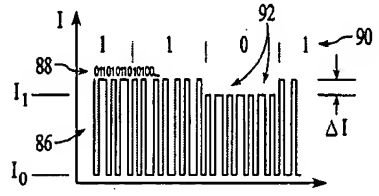




FIG. 7

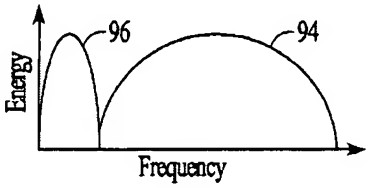



FIG. 8

**Regarding claim 1**, MacKinnon discloses a transceiver **(FIG. 11 (120-node)/FIG. 6 (76-node) in which the node receives and transmits optical signals; thereby, making the node functionally equivalent to a transceiver)** comprising:

a signal power source adapted to produce a physical layer signal for transmission across a physical link **(FIG. 9 (98-laser diode) in which the laser diode produces a physical layer signal, e.g. produces an optical carrier)**;

a high-speed data modulator that is coupled to the signal power source wherein the signal power source is configured to modulate a physical layer signal with a high-speed data signal received from the high-speed data modulator **(FIG. 5 (60-modulating steps)/FIG. 9 (102-switch) and col4 ln63-67 to col5 ln1-15 in which the switch applies the higher-speed application data to the power source (98))**; and

an out-of-band data modulator that is coupled to the signal power source wherein the signal power source is configured to modulate the physical layer signal in response to out-of-band data received from the out-of-band data modulator **(FIG. 5 (60-modulating steps)/FIG. 9 (106-switch)/FIG. 8 (96-out of band management data, 94-application data) and col4 ln63-67 to col5 ln1-15 in which the switch applies the lower speed management data to the power source (98))** wherein modulation by the high-speed data modulator and out-of-band data modulator produces an outgoing double modulated signal including high- speed data and out-of-band data **(FIG. 7 in which the modulation of the high-speed application data and the lower speed management data (out of band data) creates a double modulated signal)**.

**Regarding claim 5**, MacKinnon discloses the transceiver of claim 1 as applied above.

Mackinnon further discloses wherein:

the transceiver is an optical transceiver **(FIGs. 6,11)**;

the signal power source comprises a laser driver and laser **(FIG. 9 (Signal Power Source) in which FIG. 9 comprises a laser (98) and a laser driver (elements: 100,102,104,106,108))**; and

the laser driver further comprises high-speed data 1 level command that defines the power output by the laser when a high-speed data 1 is output **(FIG. 9 (ΔI) in which ΔI defines the power output by the laser when a high-speed data 1 is generated as seen in FIG. 7)**, wherein the out-of-band data modulator is coupled to the high-speed data 1 level command **(FIG. 9 in which the out of band modulator is coupled to ΔI)**.

**Regarding claims 7-9**, Mackinnon further discloses in col3 ln9-39 an out of band modulator (e.g. management/supervisory data modulator-FIG. 9) which modulates routing/configuration/reconfiguration data (identification/authentication information) or "health" data (health of the transceiver/network).

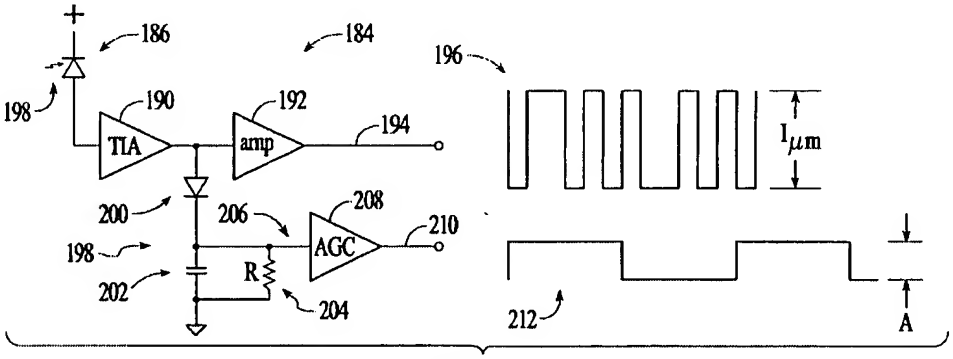



FIG. 12

**Regarding claim 10**, MacKinnon discloses the transceiver of claim 1 as applied above.

MacKinnon further discloses comprising:

a signal reception element configured to receive physical layer signals from a physical link and to produce an incoming double modulated signal from the physical layer signal **(FIG. 12 (198-detector) in which the detector receives the transmitted signals (physical layer signals) and produces a double modulated signal in electrical form)**;

an out-of-band detector that is coupled to the signal reception element and is configured to extract out-of-band data from the incoming double modulated signal **(FIG. 12 (management signal detector: bottom half of FIG. 12, 212-extracted management data signal) in which the management signal detector (out of band detector) is coupled to detector-198 and is configured to extract the management signal from the incoming double modulated signal from TIA-190, e.g. 212-exteracted management signal)**;

a high-speed data amplifier that is coupled to the signal reception element and is configured to extract high-speed data from the incoming double modulated signal **(FIG. 12 (192-amp, 194-output, 196-extracted high speed application data) and col6 ln49-51 in which the amplifier removes the management data, leaving the application data at the output-194, e.g. extracts/separates the application data from the double modulated signal)**.

**Regarding claim 12**, rejected as stated in claim 1 rejection.

**Regarding claim 13**, rejected as stated in claim 2 rejection.

**Regarding claim 14**, the method of claim 12, wherein modulating the modulated data signal comprises varying the peak power of the physical layer

signal **(FIG. 7 in which the peak power is varied during modulation, e.g. peak power of a "1" is varied during modulation)**.

**Regarding claim 15**, rejected as stated in claim 3 rejection.

**Regarding claims 16-17**, rejected as stated in claim 10 rejection.

**Regarding claim 18**, rejected as stated in claim 10 rejection in which the demodulator/extractor in FIG. 12 is a peak detector as noted by MacKinnon col6 ln58-60.

**Regarding claim 20**, rejected as stated in claim 6 rejection.

2. **Claims 11, 19 and 21-23 rejected** under 35 U.S.C. 103(a) as being unpatentable over Mackinnon.

**Regarding claim 11**, rejected as stated in claim 10 rejection in which an IR detector is well known in the art and within the scope of MacKinnon's invention, e.g. dependent on the wavelength of the optical carrier being used.

**Regarding claim 19**, MacKinnon discloses the method of claim 16 as applied above.

MacKinnon does not expressly disclose wherein extracting out-of-band data from the incoming double modulated signal comprises measuring the extinction ratio of the incoming double modulated signal. However, it would have been obvious to one of ordinary skill in the art at the time of invention that MacKinnon's demodulator/extractor ,FIG. 12, measures the extinction ratio (ratio between the received power level of a "1" and a "0") in order to be able to extract

the management data, e.g. FIG. 7- the extinction ratio difference (ΔI) between the two levels of "1" is the management signal.

**Regarding claim 21**, Mackinnon discloses a node (FIG. 11) that samples the incoming signal and based on the management data, re-routes or "drops" the double modulated signal, in which re-routing never reprocesses the signal, e.g. converts the signal back to electrical form via demodulator (FIG. 12-out of band logic) and re-transmits the signal via modulation circuitry (FIG. 9). However, it would have been obvious to one of ordinary skill in the art at the time of invention that reprocessing the signal at the node is within MacKinnon's invention, e.g. update the "health" information on the management signal (col3 ln17-24: "health" information includes detected network problems such as broken fibers, equipment degradation, a malfunctioning node, giving notice of detected alarms). Therefore, making it obvious to one of ordinary skill in the art that in order to update the management/supervisory signal information, the supervisory signal needs to be demodulated and re-transmitted by the node. Furthermore, a signal processor at the node for controlling the functions of the node is well known in the art and would have been obvious to incorporate into a repeater. The motivation being that the signal processor is needed to: determined the "health" problems (e.g. col3 ln17-24) at the node, control the routing and reprocessing of the signals and update the supervisory signal (out of band signal) to inform the nodes downstream of a detect "health" problem.

**Regarding claim 22**, rejected as stated in claim 21 rejection in which demodulating, updated the supervisory "health information" and retransmitting

the signals at the node is obvious in view of MacKinnon's invention, FIGs. 6 (network system), 9 (transmitter), 12 (demodulator), 11 (node),

**Regarding claim 23**, MacKinnon discloses the repeater of claim 21 as applied above.

MacKinnon does not expressly disclose wherein the out-of-band logic is a microprocessor. However, it would have been obvious to one of ordinary skill in the art at the time of invention that the demodulating circuit (out of band logic) can be implemented using a microprocessor, e.g. DSP. The motivation being that this allows the signals (management and application) to be extracted digitally which is faster, offers improved SNR and provides "cleaner" received signals, e.g. less noise.

3. **Claims 2-4 is rejected** under 35 U.S.C. 103(a) as being unpatentable over MacKinnon in view of Varga et al (US 2005/0213621), Varga et al hereinafter referred to as Varga.

**Regarding claim 4**, MacKinnon discloses the transceiver of claim 1 as applied above.

Mackinnon further discloses wherein: the transceiver is an optical transceiver **(FIG. 11 (120-node)/FIG. 6 (76-node) in which the node receives and transmits optical signals; thereby, making the node functionally equivalent to a transceiver)**;

the signal power source comprises a laser driver and laser **(FIG. 6 (72-laser diode source, 84-laser driver))**;

MacKinnon does not expressly disclose the transceiver further comprises an average power bias circuit configured to control the average power output by the laser, wherein the out-of-band data modulator is coupled to the average power bias circuit; and

the laser driver further comprises an extinction ratio command input configured to control the extinction ratio of a signal output by the laser, wherein the out-of-band data modulator is coupled to the extinction ratio command input.

However, it is well known in the art to control the bias (average power output bias) and extinction ratio of a laser inside a transceiver, for the purpose of being able to adjust optical properties of laser to transmission conditions. As evidence, prior art reference Varga is provided in which Varga discloses in ¶0004-BACKGROUND to control the average power of a laser via a control circuit with an adjustable input, e.g. potentiometer; furthermore, in ¶0004 the extinction ratio of a laser is also controlled via a control circuit with second adjustable input, e.g. second potentiometer. Varga further shows an improved method of: controlling the average power output of a laser (FIG. 5) and controlling the Extinction Ratio of the signal output of a laser (FIG. 6). Therefore, making it obvious to one of ordinary skill in the art to have incorporate these well known elements into MacKinnon for the purpose of dynamically adjusting the properties of the laser as noted by MacKinnon col5 ln24-26 and Varga¶0004.

**Regarding claims 2-3**, rejected as stated in claim 4 rejection.

4. **Claim 6 is rejected** under 35 U.S.C. 103(a) as being unpatentable over MacKinnon in view of Brown et al (US 2003/0223761), Brown et al hereinafter referred to as Brown.

**Regarding claim 6**, MacKinnon discloses the transceiver of claim 1 as applied above.

Mackinnon further discloses wherein the out of band modulator is configured to modulate using subband quadrature coding (SQC) (ABSTRACT), QAM (col8 ln8-15), among other well known modulation techniques (col8 ln16-21).

MacKinnon does not expressly disclose wherein the out-of-band modulator is configured to modulate using at least one of phase shift keying, binary phase shift keying, quadrature phase shift keying, and Manchester encoding. However, it would have been obvious to one of ordinary skill in the art at the time of invention that many different encoding schemes are applicable to encoding the out of band data as noted by MacKinnon in col8 ln16-21. As evidence, prior art reference Brown is provided in which Brown discloses wherein the out-of-band modulator is configured to modulate using at least one of phase shift keying, binary phase shift keying, quadrature phase shift keying, and Manchester encoding **(FIG. 8 (out of band management channel), FIG. 2 (126-management unit, 144-laser current summing circuit), FIG. 3 (Manchester encoder, 144b-summing circuit) in which the EOC (Embedded Operational Channel) is modulated by Manchester encoding)**. Therefore, making it a

matter of design choice as to which specific encoding scheme is used to encode out of band management data.

***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luis F. Garcia whose telephone number is (571)272-7975. The examiner can normally be reached on 8-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken N. Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LG

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER